



**Sonoma County EDB  
COVID-19 Impacts on Industries and Organizations**

**August 2021**

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## Contents

Executive Summary.....	2
1. Introduction .....	4
2. The Macroeconomic Environment in 2021: Recovery Context .....	5
Summary of Broader Economic Conditions and Importance for Sonoma County .....	7
3. Effects of COVID-19 to July 2021: Industries and Organizations .....	7
3a. Continued Risks to Specific Industries and Organizations in Sonoma County: Scarring .....	8
Agriculture.....	9
Construction.....	9
Manufacturing .....	10
Wholesale, Transportation and Warehousing .....	11
Retail Sales.....	11
Information .....	12
Financial, Real Estate and Professional Services.....	13
Education: Public and Private.....	13
Health Care and Social Assistance .....	14
Visitor-Related Industries: Hotels and Events .....	14
Restaurants and Bars: Related and Not Related to Visitors .....	15
Other Services.....	16
Summary on Industries and Organization Effects .....	17
3b. Occupations: Employment Changes to 2024 .....	18
(1) Management, business, science, and arts occupations .....	18
(2) Service occupations.....	19
(3) Sales and office occupations .....	19
(4) Natural resources, construction, and maintenance occupations .....	19
(5) Production, transportation, and material moving occupations .....	20
Summary of Occupations Changes and Importance to Workforce Development .....	20
Increasing ROI from ARPA Funding: Economic Impacts and Multipliers .....	21
4. Broader Considerations and Sonoma County Forecasts .....	22
BIPOC Communities and Occupations Shifts .....	22
Updated Forecasts for Sonoma County to 2024 .....	23
Forecasts of Residential Labor Force Data .....	24
Working from Home and The Economy Reopening .....	25
Emerging Examples and Concerns .....	26
5. Conclusions .....	27
What are the most vulnerable industries to 2024? .....	27
What are the most vulnerable occupations to 2024?.....	28
Recommendations for Use of Funding .....	29
6. References .....	30

## Executive Summary

This study, commissioned by Sonoma County Economic Development Board (EDB), considers the continuing and forecasted effects of COVID-19 on specific industries and organizations. This report updates a 2020 report done by EFA on the Sonoma County economy in three ways: (1) identifies industries that remain challenged as general economic recovery continues in 2021 and beyond; (2) identifies occupations that remain challenged as general economic recovery continues in 2021 and beyond; and (3) given these challenges, provides recommendations as to where funds coming to Sonoma County from the American Rescue Plan Act of 2021 (ARPA) be placed to maximize return on investment (ROI). We also consider Sonoma County's black, indigenous and people of color (BIPOC) workers and how ARPA funding may help equity goals as recovery continues in our recommendations.

There will be lingering impacts from COVID-19 on the county economy along with recovery to 2024 at least. The national economy is recovering as of July 2021. Positive forecasts through 2024 depend greatly on a global emergence from COVID-19, the reduced threat of more stay-at-home orders, and no general economic shutdowns or restrictions on business activity. Spending by the federal government on households, employers and state and local governments has been relatively large and ubiquitous. Job losses are reversing due to these policies, relatively low interest rates and the gradual lifting of social restrictions. However, specific industries remain at risk, which affects Sonoma County's jobs recovery.

### Vulnerable Industries and Organizations

The data in this report provides a way to consider the most vulnerable industries in Sonoma County. The summary data include:

- Ability to work from home (from McKinsey and Company report cited in this study);
- Percent reduction in the number of jobs from Dec 2019 to June 2021 (the latest data);
- Forecasted changes in employment to 2024 from Dec 2019 for Sonoma County by industry;
- State and national forecasts to 2024 as context for Sonoma County's recovery; and
- Location Quotients (LQs more than 1 suggest economic support for an industry in Sonoma County).

#### Industry and Organizations at Risk, Sonoma County, as of June 2021

Industry	Change Job			LQ (as an inverse measure of local risk), 2019	Work from Home Probability	% Change Dec 2019 to Dec 2024
	Jobs June 2021	Dec 2019 to June 2021	% Change Dec 2019 to June 2021			
Accommodation and Food Services	17,200	-4,600	-21.1%	1.06	9.0%	-9.1%
Educational Services	1,400	-1,000	-41.7%	0.52	33.0%	-7.3%
Administrative/Waste Management	11,300	-500	-4.2%	0.86	31.0%	-0.3%
Arts, Entertainment, and Recreation	3,500	-500	-12.5%	1.01	19.0%	1.0%

Sources: California EDD, EMSI, EFA

These summary data are one set of ways to consider industry or organizational risk. Every industry has unique challenges (and in some cases opportunities) to 2024, where broader forecasts drive many of the conclusions about industry or occupational risk in this study. Supporting a return to pre-pandemic levels of employment or incomes in specific industries or occupations, is a strong way to use ARPA funding to help the Sonoma County economy. We did not include government employment or data for most of this report as separate funding is coming for municipal governments. However, because employers hire for specific jobs, the use of ARPA funding may also be to train or support specific occupations remaining

available in Sonoma County. There may be some cross effects with public- and private-sector hiring based on available workers and trained workers living regionally for jobs offered by industries and organizations. Also, we show the potential multiplier effects for private-sector industries and organizations to further inform decision making on ARPA funding allocations.

## Vulnerable Occupations

Occupations are what people do for work; training for vulnerable occupations may be where workforce development support is most needed. However, supporting all “vulnerable” occupations does not necessarily mean strong return on investment in dollars more than social return. Summary data include:

- Percent changes in jobs from May 2019 to May 2020 (the latest jobs levels by occupation data);
- Percent changes in jobs from May 2020 to Dec 2024 (forecasted);
- Occupational Quotient (OQ) in Sonoma County (larger OQ means more economic support for the industry, similar theory as the LQ for industries).

### Occupation Summary Data, (What People Do) and Employment Demand, Occupations at Risk

	2020	Jobs Change since 2019	% change 2019-20	Change 2020- 2024	% change 2020-24	Occ Quotient (OQ)
<b>Total all occupations</b>	<b>193,830</b>	<b>-14,040</b>	<b>-6.8%</b>	<b>3,940</b>	<b>2.0%</b>	
Production	10,770	-790	-6.8%	-130	-1.2%	1.09
Personal Care and Service	4,390	-1,130	-20.5%	-60	-1.4%	0.91
Office and Administrative Support	22,350	-2,650	-10.6%	-340	-1.5%	0.81
Educational Instruction and Library	11,450	-750	-6.1%	-230	-2.0%	1.47
Arts, Design, Entertainment, Sports, and Media	2,040	-160	-7.3%	-40	-2.0%	0.62
Food Preparation and Serving Related	17,190	-4,430	-20.5%	-460	-2.7%	1.57
Sales and Related	20,070	-2,740	-12.0%	-730	-3.6%	0.99

Sources: California EDD, Occupational Employment and Wages Statistics (OEWS), EMSI, and EFA

Many ARPA models are emerging across California. While political exigency may drive some decision making, economic prudence suggests something other than a first-come, first-serve model. Example funding criteria include:

1. Business to be funded has a viable business plan with viable financial projections to 2024;
2. Business headquartered in Sonoma County;
3. Multiplier effects of ARPA spending on that industry support a relatively-large level of additional income (bang for buck);
4. The business serves BIPOC communities, has BIPOC owners or does not exclude their support;
5. Risk of this industry remaining competitive to 2024 is relatively low, especially if funding provided;
6. Business utilizes local residents as a workforce; and
7. Business is in a targeted industry per Sonoma County EDB’s strategic planning.

Occupations to be trained, thus training centers or workforce-development specialists seeking funding, should also be funded using a plan for new workers to match up to rising demand. We recommend the following criteria:

1. Occupations with rising demand given the pandemic’s lingering effects between 2021 and 2024;
2. Occupations flexible among multiple industries;
3. Occupations specific to one industry must have a rising jobs forecast to 2024 for funding; and
4. Occupations specific to one industry may have rising risk if automation replaces the job or there are continued risks from COVID-19 and variants that can affect that occupation’s outlook.

## 1. Introduction

The COVID-19 recession had many effects on industries and organizations (“employers” as a group from here). The slow lifting of social restrictions, consumer reticence to travel and continued health risks are all mixing together as of July 2021 to affect the Sonoma County economy’s path to recovering its pre-recession capacity of jobs, wages and incomes, including tax revenues from economic activity. A lack of recovery suggests some “scarring” has taken place, or there has been a reduction in the overall capacity of that industry or set of organizations as employers to create jobs and incomes in Sonoma County. Funding is coming to Sonoma County from the American Rescue Plan Act of 2021 (ARPA). This report seeks to guide the County of Sonoma as to the economic effects on private-sector industries and organizations since March 2020 and also where the best bets may lie for using the ARPA funding as investment. This study was commissioned by Sonoma County Economic Development Board (EDB).

This report updates a 2020 report done by EFA on the Sonoma County economy in three ways:

- Identifies industries that remain challenged as general economic recovery continues to 2024;
- Identifies occupations that remain challenged as general economic recovery continues to 2024; and
- Given the challenges, identify recommendations as to where available resources to assist in recovery be placed to maximize the return on investment (ROI).

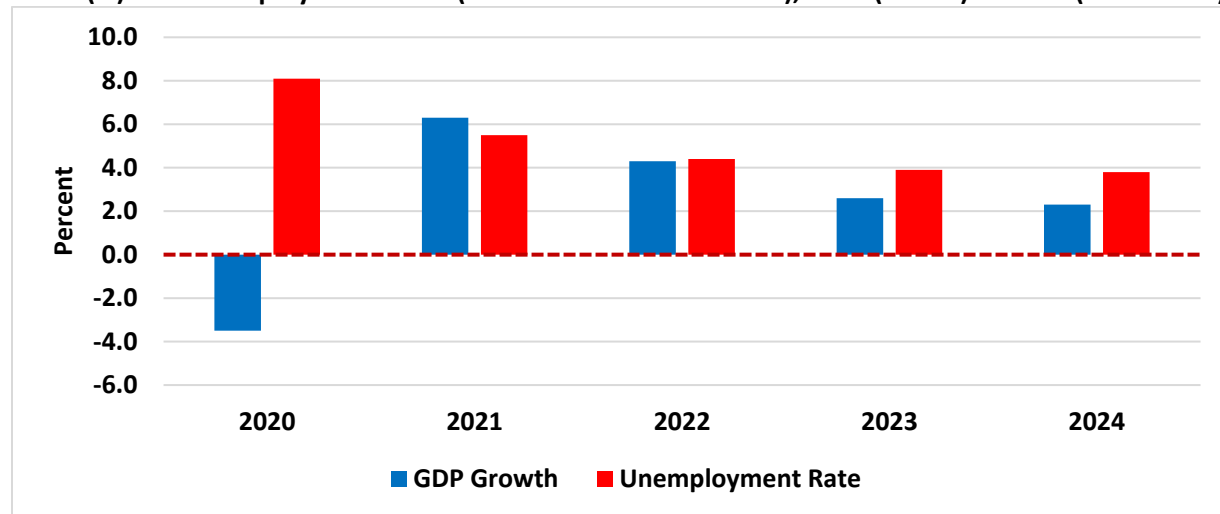
This report culminates, after providing the latest data on Sonoma County’s employers and occupations, with ways to consider requests for ARPA funding. We re-forecast and update the county economy’s path back to pre-COVID employment levels and beyond, and also consider what occupations (the jobs performed by workers) may be in demand to 2024. Specific occupations have also been affected by the recent recession and current recovery, some related to specific industries and organizations (healthcare workers) and some more general across multiple employers (administrative workers). Workforce development challenges or opportunities, especially in shifting one type of worker to a different occupation, are important to providing a local labor force as the county economy recovers.

This study has the following sections. Section 2 is a brief overview of the latest national and state level forecasts through 2024 as of July 2021. These data help shape forecasts for Sonoma County later to update EFA’s work from 2020. Section 3 looks at Sonoma County employment at both the industry and occupational levels. Data shown provide indicators of economic recovery and continued concerns to June 2021 (the latest data as of July 2021). To increase ROI from the ARPA funding allocation, Sonoma County needs to invest in both employer and employee training support. Section 4 updates EFA’s forecast from 2020 to 2024 for both Sonoma County overall and specific industries and organizations. The final section provides conclusions about challenges and opportunities for the county economy to 2024 as well as recommendations to focus ARPA funding to increase ROI from those dollars.

## 2. The Macroeconomic Environment in 2021: Recovery Context

In July 2021, the COVID-19 recession was declared as the shortest on record for the national economy, lasting two months. However, we need to cautious that lingering or shadow effects created by the COVID-19 recession are easing before true recovery and expansion can begin. For Sonoma County, there was a severe reduction in jobs in both April and May 2020. Since June 2020 to June 2021 (the latest data available at the time of this writing), jobs recovery has been underway for Sonoma County, the North Bay and California overall. Multiple fiscal-stimulus plans accompanied by low interest rates provided fuel for hiring once social restrictions were lifted in 2020 and into 2021. Forecasts for both the United States and California have steadily improved since June 2020. Initial forecasts of a return to pre-COVID levels of employment by 2024 are more optimistic as of June 2021 with a return to pre-pandemic employment levels by 2022 for both the national and state economies. Figure 1 shows a combination of recent Federal Reserve and Congressional Budget Office (CBO) forecasts to 2024 for the US economy.

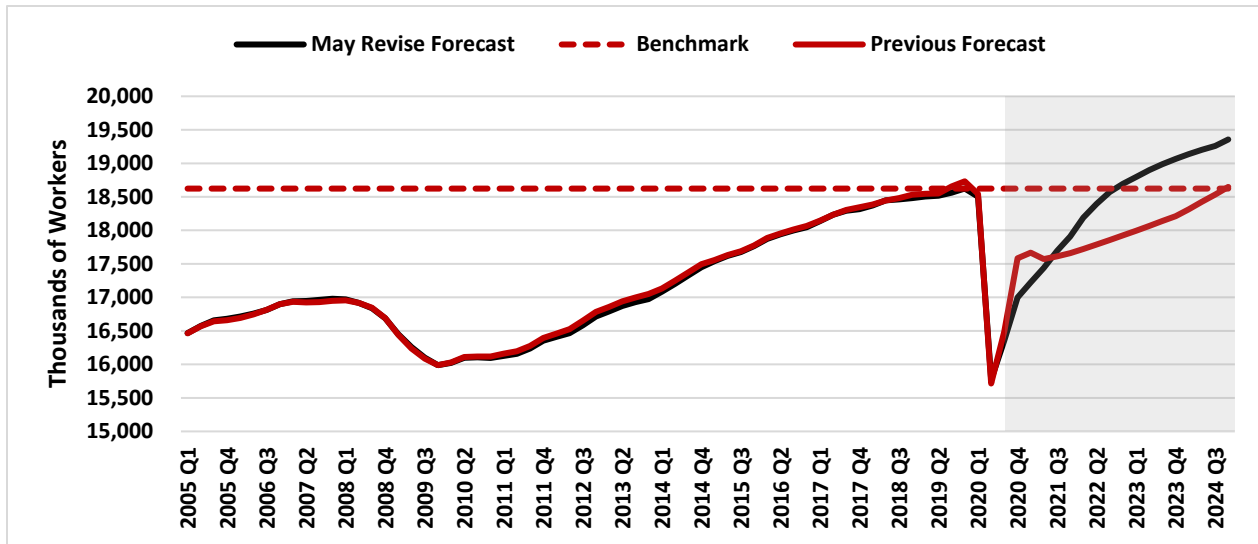
**Figure 1: US Economy Forecast Summary, as of June 2021, Gross Domestic Product (GDP) Growth Rates (%) and Unemployment Rates (Year-End % of Labor Force), 2020 (Actual) to 2024 (Forecasted)**



Sources: Federal Reserve, Congressional Budget Office and EFA

We see below that recovery has been uneven across employers and occupations. California's unemployment rate rose to an initial, seasonally-adjusted peak rate of 16.4 percent in April 2020 to fall to 7.7 percent as of June 2021. The more optimistic predictions for California affect the Sonoma County forecast and what industries and organizations may be recovering faster than others; in terms of allocating funding, we also need to be watchful of employers that may struggle to reach pre-pandemic levels of employment before 2024. We use a mix of forecasts and recent data on industry and occupations employment to drive our conclusions below. The California Department of Finance (DOF) forecast for the May 2021 Revise of the Governor's Budget have the same quarterly forecast window as our study (to 2024). Figure 2 is an example of shifting forecasts within a short amount of time; the California Department of Finance predicted a return to pre-pandemic levels of employment in California by the end of 2024 in January 2021 and then predicted a return by the third quarter of 2022 in May 2021. The data in Figure 2 are in the aggregate.

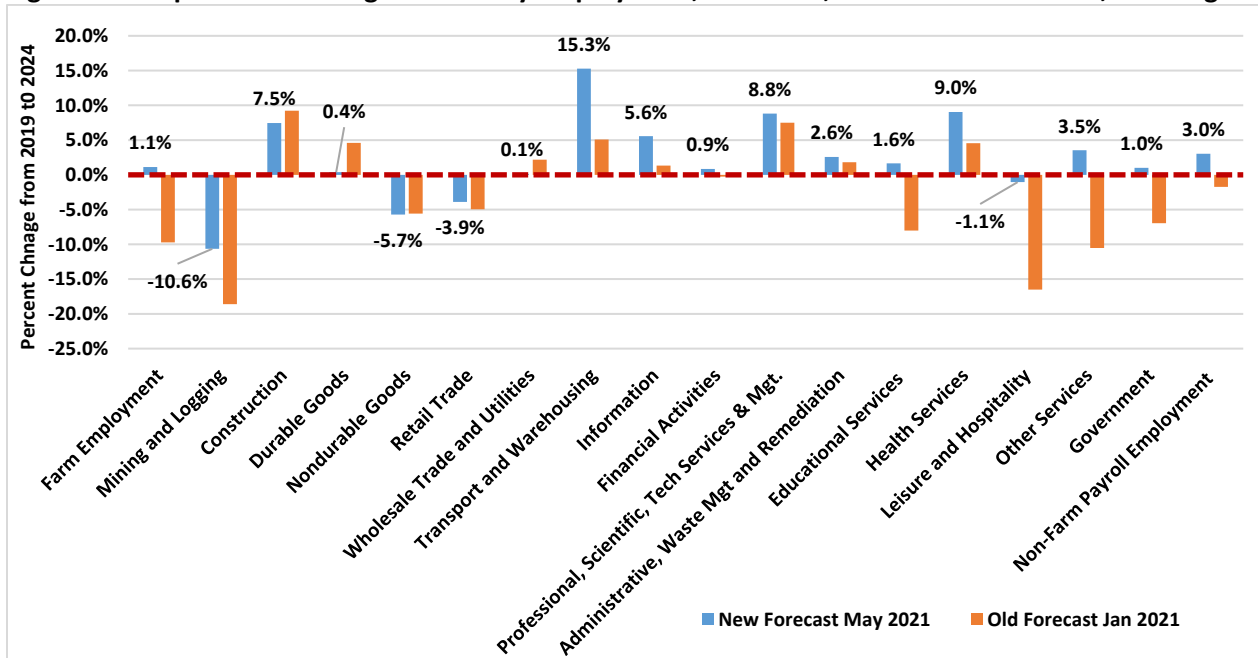
**Figure 2: Actual/Forecasted Employment, California, 2005 to 2024, Quarterly, Thousands of Workers**



Sources: California Department of Finance and EFA, Shaded Area = Forecast as of May 2021, Previous Forecast = Jan 2021

Figure 3 provides the Jan 2021 and May 2021 forecasts by industry as a link to Figure 2's data on the statewide economy. The Sonoma County economy, based on its wide variety of industries and employment opportunities from agriculture to manufacturing to government, is very much a microcosm of the California economy.

**Figure 3: Comparison of Change in Industry Employment, California, Dec 2019 to Dec 2024, % Change**



Source: California EDD and EFA

## Summary of Broader Economic Conditions and Importance for Sonoma County

The forecasts in Figures 1 to 3 assume there will not be a general stay-at-home order issued again. Consumer price inflation has increased more quickly than expected; inflation is a regressive tax on low-income households, and also affects regional employers in terms of rising employee wage demands. Our forecast (see Section 4 below) is more sanguine than those from one year ago with caveats:

- Labor force levels are down regionally, including Sonoma County, making workers harder to find as employers seek to re-hire;
- Inflation levels have increased, driven regionally by home prices, with rental markets likely to have some volatility toward the end of 2021 as eviction moratoria and state funding to relieve renters of debts all exchange hands; and
- Business investment, even at low interest rates, may not rise quickly as concerns about caseloads and global economic conditions toward Fall 2021 and Winter 2022 begin to unfold.

Let's now look more specifically at how the major industry sectors and also specific types of employers have decreased and increased hiring levels since Jan 2020 and the onset of the COVID-19 recession.

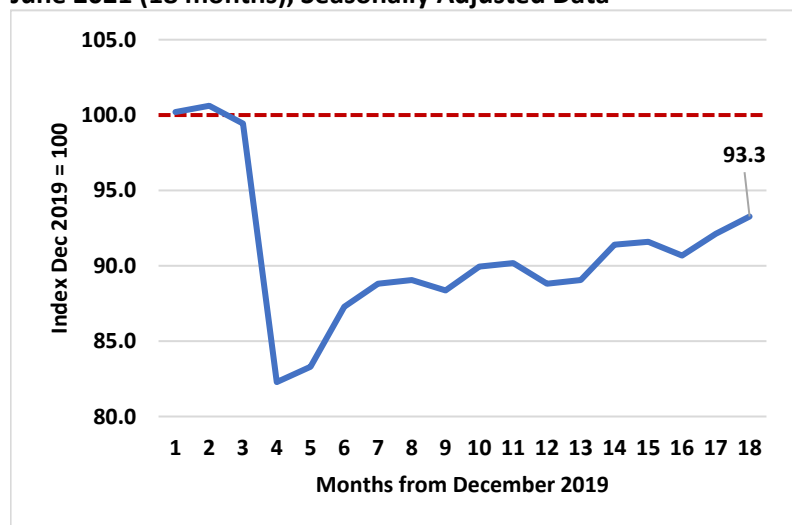
### 3. Effects of COVID-19 to July 2021: Industries and Organizations

As of June 2021, Sonoma County's economy is 93.3 percent back to its December 2019 non-farm employment level after seasonal adjustments. We show that progress in Figure 4. We use December 2019 as a benchmark after which labor markets nationally began to change based on expectations of how COVID-19 may affect the macroeconomy. Specific industries that experienced large drops in employment levels remain on the watchlist in terms of slow recovery to pre-pandemic levels of jobs, including:

- Retail;
- Education;
- Leisure and Hospitality;
- Other Services; and
- Government.

Figure 5 shows the percentage change in jobs by major industry sector as of June 2021 for Sonoma County since December 2019. These data from June 2021 are the latest estimates available at the time of this writing. Notice how the watchlist industries above continue to show reduced levels of jobs as of June 2021.

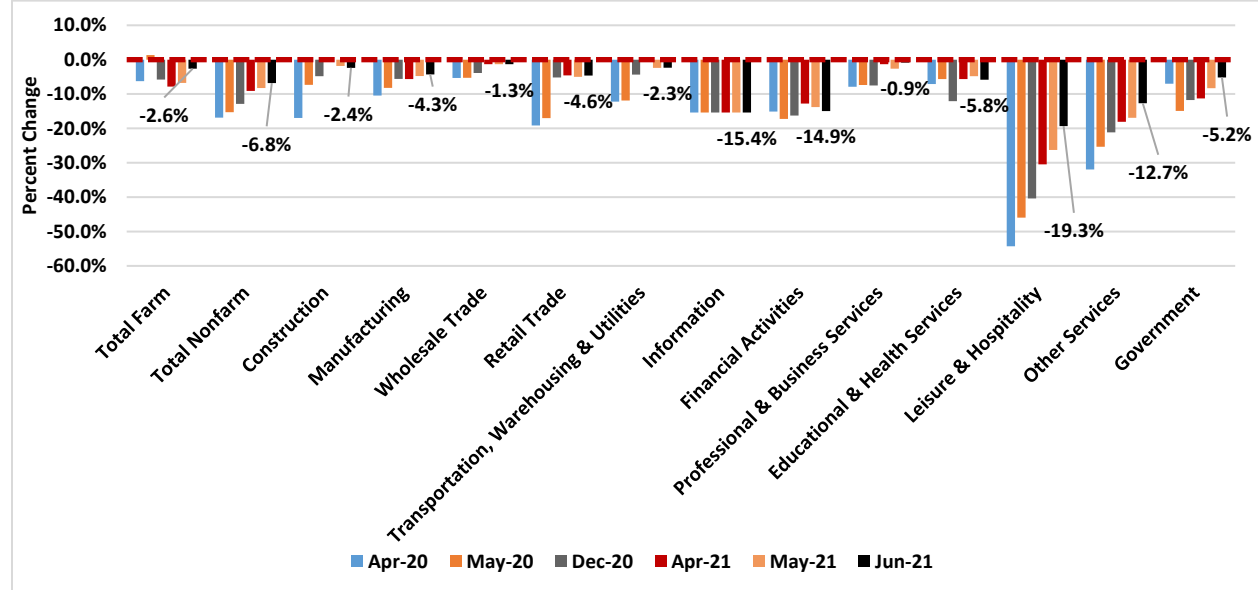
**Figure 4: Non-Farm Jobs Recovery, Sonoma County, Jan 2020 to June 2021 (18 months), Seasonally Adjusted Data**



Sources: California EDD and EFA



**Figure 5: Percentage Change in Employment Levels, Industry Sectors, Sonoma County, June 2021 compared to Jan 2020**



Sources: California EDD and EFA

In the two subsections below, we look at the major industrial sectors of Sonoma County, specific metrics, opportunities, and concerns. We do the same for occupations as a way to consider workforce development and investments in training programs for specific occupations based on recent forecasts. Each sector or major occupation has seasonally-adjusted data on the following through 2024:

- June 2021 number of workers and Percent difference from Jan 2020 levels (18 months of COVID threat or reality);
- Share of total employment in Sonoma County at the end of 2019;
- Share of total employment in Sonoma County at the end of June 2021;
- Forecasted growth from 2020 to 2024 as a combination of major data sources;
  - IMPLAN®, EMSI, CalTrans, California EDD (see references for data sources);
- Data from recent studies by McKinsey and Company, including work-from-home probabilities.

These data provide ways to consider the potential ROI of using the ARPA funding, based on employer and occupational scarring as well as the multiplier effect of investing in specific industries' stability or growth.

### 3a. Continued Risks to Specific Industries and Organizations in Sonoma County: Scarring

Industries generally face increases in the costs of doing business in the COVID-19 recession's wake, coupled with uncertain future revenues as health risks remain a concern into the foreseeable future. Later, we consider what industries are most at risk for medium-term concerns on hiring and coming back to pre-pandemic employment levels. This lack of recovery to pre-recession levels of either employment or income generation is known as recession "scarring"; construction and mortgage brokerage are

example industries from the Great Recession period (2008-10) that experienced scarring deep into the 2010s. Specific risks are forming for local businesses (ironically providing opportunities for select industries in some cases):

- **More frequent and costly maintenance, including cleaning and other remediation needs;**
- **Shifts in use and configuration of commercial real estate;**
- **Need to provide personal protection equipment (PPE) to employees;**
- **Need to manage employees at multiple locations (office or home or both in a hybrid schedule);**
- **General employee resistance to coming back to work (kids at home with limited to no daycare options and concerns over infections).**

We start with our farmers and work through other goods-producing industries to services to government. Each industry summary has six (6) data points to consider, used later to assess risk.

### Agriculture

- June 2021 workers in Sonoma County = 6,600
- % difference from Dec 2019 levels as of June 2021 = +0.0%
- Share of total employment in Sonoma County at the end of 2019 = 3.1%
- Share of total employment in Sonoma County at the end of June 2021 = 3.3%
- Forecasted growth from 2020 to 2024 = +200 jobs
- Forecasted share of total employment by 2024 = 3.1%

Agriculture, based on its supply-chain links, has experienced a mixed recovery from COVID-19. The re-opening of restaurants has increased demand for agricultural products.

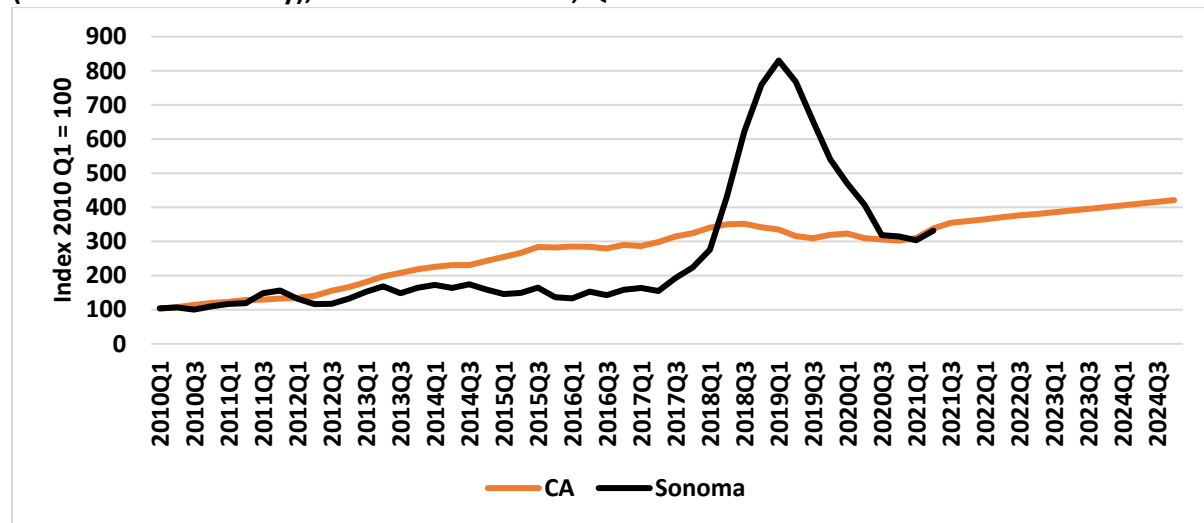
- Drought in 2021 and into 2022 is a headwind on agriculture and also construction (see below);
- Connections to manufacturing, such as the wine industry, saw a broad mix of effects in 2020;
  - Sales through classic distribution and on-premise (restaurant) channels fell, while
  - Sales in direct-to-consumer markets and in grocery and other retail outlets increased;
- A lack of local processing, for both livestock and crops, underscores regional farmers' vulnerability to supply-chain problems nationally and internationally;
- Costs of doing business are rising across harvesting and food manufacturing;
- Land and vineyard contract support businesses for agriculture were also hard hit during 2020 in terms of reduced demand and employment in this category, but may have increased demand in terms of water-conservation equipment installation and maintenance in 2021 to 2024.

### Construction

- June 2021 workers in Sonoma County = 16,100
- % difference from Dec 2019 levels as of June 2021 = -2.4%
- Share of total employment in Sonoma County at the end of 2019 = 7.7%%
- Share of total employment in Sonoma County at the end of June 2021 = 8.1%
- Forecasted growth from 2020 to 2024 = +1,800 jobs
- Forecasted share of total employment by 2024 = 9.4%

The construction industry recovered quickly from original job losses in 2020, a recovery likely to continue as building permits continue to rise in Sonoma County (see Figure 6). During 2020, there was a rise in building materials purchases and continued construction activity due to building being declared an essential business in Sonoma County.

**Figure 6: Building Permits for New Housing Units, Sonoma County and California, 2010 Q1 to 2024 Q4 (Forecasted for CA only), Index Jan 2010 = 100, Quarter Data**



Sources: Census Bureau Building Permits Survey ([www.census.gov/construction/bps](http://www.census.gov/construction/bps)) and EFA

Some headwinds exist for the construction industry to watch:

- Rising prices of materials: global supply-chain issues for building materials as well as rising demand are increasing costs for projects;
- Lack of available labor: job openings remain unfilled and workers are not matching skills if they are not working;
- Consumer burnout on building materials and services spending given the increase in 2020;
- Drought and concerns over new housing or commercial spaces: water conservation may slow down permitting and reduce the amount of new building allowed.

## Manufacturing

- June 2021 workers in Sonoma County = 22,100
- % difference from Dec 2019 levels as of June 2021 = +5.6%
- Share of total employment in Sonoma County at the end of 2019 = 10.9%
- Share of total employment in Sonoma County at the end of June 2021 = 11.1%
- Forecasted growth from 2020 to 2024 = -300 jobs
- Forecasted share of total employment by 2024 = 9.7%

Manufacturing jobs in Sonoma County are connected to local agriculture (wineries) and also to global markets including advanced technology manufacturing (medical devices for example). The COVID-19 recession had mixed effects on Sonoma County's manufacturing industry. For example, the wine industry is still recovering from a split recession and recovery, though as bars and restaurants re-open, the wine industry is expected to have demand shift back toward classic distribution channels.

Forecasted growth in manufacturing jobs to 2024 is relatively flat at a loss of 300 total jobs, based on lingering effects of the COVID-19 recession on overall demand for food and beverage manufacturing (-1.4 percent downturn). The outlook for advanced manufacturing remains strong, especially for medical devices and health care equipment; this is partially due to lingering, positive effects of COVID-19 on health-related businesses.

Local manufacturing depends somewhat on global supply chains remaining open and allowing goods and services to flow beyond California's borders. An opportunity for local manufacturing is to expand local storage and warehousing as a way to fill local supply-chain gaps for regional resilience purposes. Such connections help local producers directly by having more local food and beverage products remain local in terms of target markets. Some of that connection depends on the flow of visitors.

### Wholesale, Transportation and Warehousing

- June 2021 workers in Sonoma County = 11,600
- % difference from Dec 2019 levels as of June 2021 = -1.7%
- Share of total employment in Sonoma County at the end of 2019 = 5.5%
- Share of total employment in Sonoma County at the end of June 2021 = 5.8%
- Forecasted growth from 2020 to 2024 = No change in jobs (forecast as of June 2021)
- Forecasted share of total employment by 2024 = 5.3%

The COVID-19 crisis triggered fast changes in how households purchase goods, rapidly expanding virtual markets already growing before the pandemic. Transportation and warehousing recovered quickly between the end of 2019 and June 2021 in both Sonoma County and California on average (basically no loss of aggregate jobs as of June 2021 from December 2019). Jobs in wholesale have seen a mixed recovery as classic supply chains are slowly recovering with re-opening. Growth to 2024 depends greatly on how households continue to demand home delivery versus brick-and-mortar retail. As COVID-19 variants continue, with public-health mandates providing some incentives to not go out in public, these industries likely continue to have reasons to grow with rising demand for home delivery.

### Retail Sales

- June 2021 workers in Sonoma County = 23,000
- % difference from Dec 2019 levels as of June 2021 = -4.5%
- Share of total employment in Sonoma County at the end of 2019 = 11.2%
- Share of total employment in Sonoma County at the end of June 2021 = 11.5%
- Forecasted growth from 2020 to 2024 = -900 jobs
- Forecasted share of total employment by 2024 = 10.0%

There are three key concerns and two opportunities in Sonoma County's retail sector.

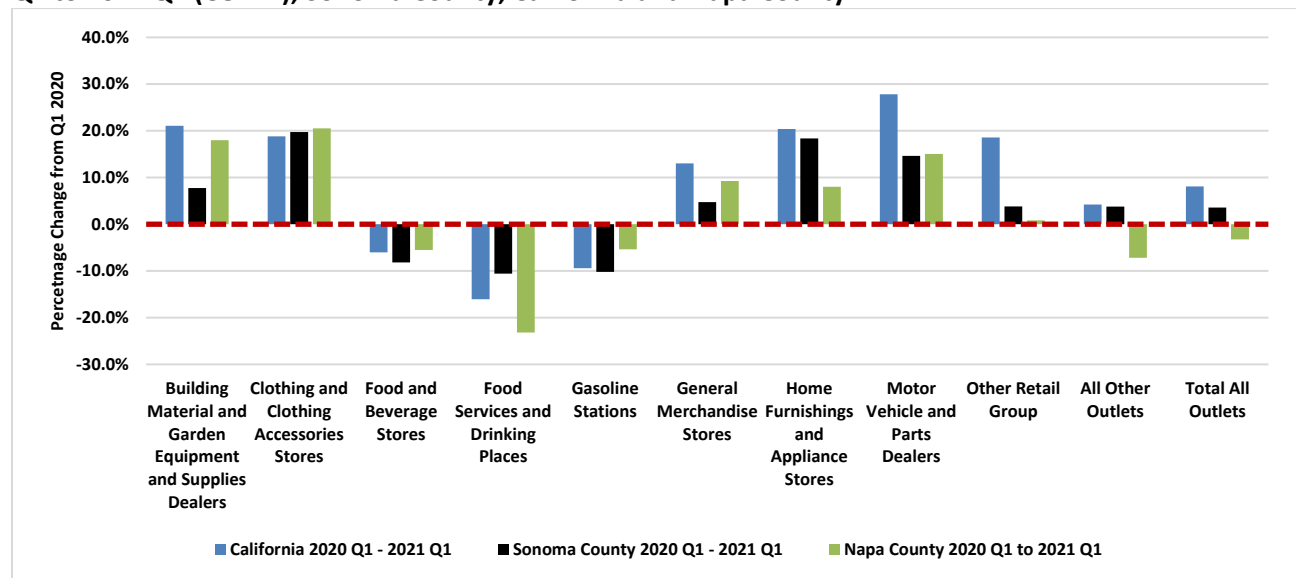
- Risk in brick-and-mortar retail (where there is a local, physical presence) is likely at threat into the foreseeable future as a shadow effect of COVID-19 and households utilizing internet sales more than before COVID-19;

- Reduced tourism flows also reduced brick-and-mortar retail sales during 2020, forcing some local retail businesses out of business; and
- Sonoma County experienced another year of a falling, estimated population, shifting patterns of retail sales from local residents (see Section 4 for more on population change).

The two opportunities are: (1) day visitors or overnight guests coming back to Sonoma County use physical retail sales when traveling, bringing that support back to the county economy; and (2) grocery retail, as the increase in grocery sales during COVID-19 may become a rising trend, especially if people are working from home versus commuting.

Figure 7 shows recent comparison data on taxable sales in Sonoma County through Quarter 1 2021 versus pre-pandemic levels in Quarter 1 2020. These data for Napa County and California overall provide geographic comparisons. The power of Figure 7 is in tracking retail “scarring”; lower taxable sales in specific retail sectors signal less worker demand as they continue over time.

**Figure 7: Taxable Retail Sales Comparisons, Percentage Change, 2019Q1 to 2020Q1 (Pre-COVID) and 2020 Q1 to 2021 Q1 (COVID), Sonoma County, California and Napa County**



Sources: [California Department of Tax and Fee Administration](#), EFA

## Information

- June 2021 workers in Sonoma County = 2,200
- % difference from Dec 2019 levels as of June 2021 = -15.4%
- Share of total employment in Sonoma County at the end of 2019 = 1.2%
- Share of total employment in Sonoma County at the end of June 2021 = 1.1%
- Forecasted growth from 2020 to 2024 = -200 jobs
- Forecasted share of total employment by 2024 = 1.1%

Employers in this industry range from newspapers to software companies. For decades, the North Bay has been trying to attract, retain and expand software businesses with varying success. The COVID-19 recession and recovery has led to many changes in the software industry in terms of where people work, how they work and the potential future of going into the office. Indirectly, there may be jobs in software development and systems being done by new or previous households that were commuting or living in the urban Bay Area that migrated to Sonoma County. The small number of jobs lost as predicted by 2024 are for jobs at local employers versus the number of people doing work in this industry, which may include work-from-home programmers and systems-design professionals.

### Financial, Real Estate and Professional Services

- June 2021 workers in Sonoma County = 30,200
- % difference from Dec 2019 levels as of June 2021 = -5.9%
- Share of total employment in Sonoma County at the end of 2019 = 14.9%
- Share of total employment in Sonoma County at the end of June 2021 = 15.1%
- Forecasted growth from 2020 to 2024 = +700 jobs
- Forecasted share of total employment by 2024 = 16.9%

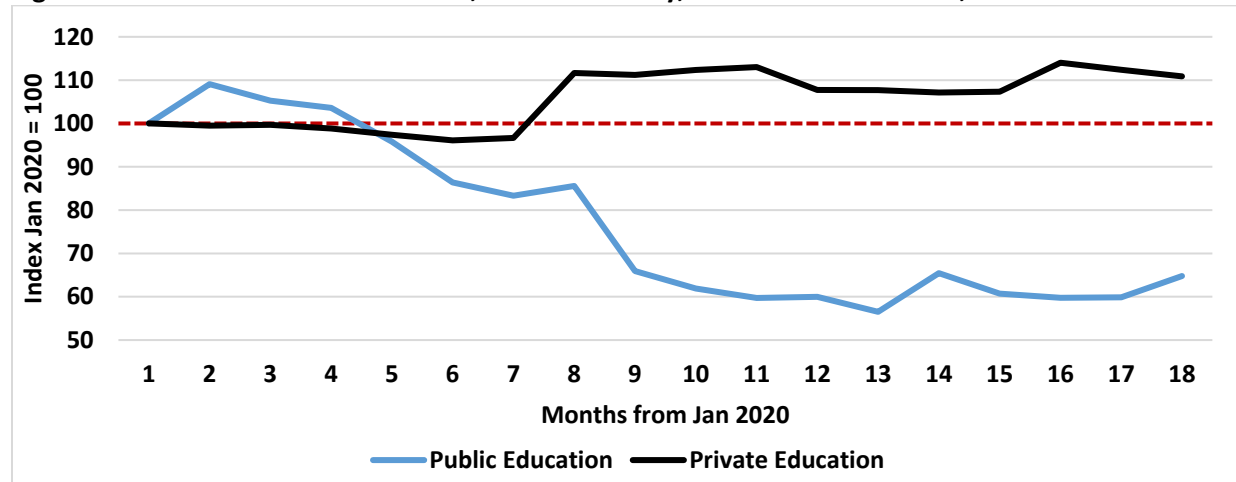
Professional and financial employers may continue to have workers primarily at home into 2022. The COVID-19 recession, with the sharp drop in interest rates and increased gains in equity markets, supported jobs across financial sectors specifically. The economic recovery for Sonoma County's employers in these industries remains strong (700 more jobs by 2024), with real estate market growth and rising wealth driving more activity. These jobs have little long-term threat that was not present pre-pandemic.

### Education: Public and Private

- June 2021 workers in Sonoma County = 15,200
- % difference from Dec 2019 levels as of June 2021 = -16.0%
- Share of total employment in Sonoma County at the end of 2019 = 8.4%
- Share of total employment in Sonoma County at the end of June 2021 = 7.6%
- Forecasted growth from 2020 to 2024 = +300 jobs
- Forecasted share of total employment by 2024 = 6.2%

Getting back into the classroom will test how much re-hiring both public and private education makes in terms of faculty, staff and administrative workers. Figure 8 shows the progression of public and private education jobs since January 2020. This figure shows the classic dichotomy between public and private sector reactions to recession. Private education employment began to show recovery during the Fall 2020. On the public side, the initial downturn in jobs came from a mix of lack of work and also pessimistic forecasts of reduced state budgets generally; the 2021 state budget in California is likely to restore many lost jobs, but retirements and costs savings motives otherwise such that pre-pandemic levels of workers in public education lag private-sector education recovery. The outlook to 2024 is mixed for education jobs (good for private education, but likely a decline in public education jobs primarily due to retirements).

**Figure 8: Private and Public Education, Sonoma County, Jan 2020 to June 2021, Index Jan 2020 = 100**



Sources: California EDD, EMSI and EFA

### Health Care and Social Assistance

- June 2021 workers in Sonoma County = 32,400
- % difference from Dec 2019 levels as of June 2021 = -3.0%
- Share of total employment in Sonoma County at the end of 2019 = 15.5%
- Share of total employment in Sonoma County at the end of June 2021 = 16.2%
- Forecasted growth from 2020 to 2024 = +3,300 jobs
- Forecasted share of total employment by 2024 = 16.0%

The COVID-19 pandemic, as a health crisis that became an economic recession, affected healthcare employers in mixed ways. Acute and hospital care increased in demand episodically with changing waves of COVID-19 cases. Outpatient and other, non-acute health care saw a downturn in jobs generally, with services such as mental health support rising in demand. The outlook to 2024 for healthcare employment is relatively strong. Social assistance for a variety of people that need help from non-governmental organizations across a wide spectrum of non-acute health care are also likely to see rising demand. Many of these organizations rely on a mix of donor and government funding.

### Visitor-Related Industries: Hotels and Events

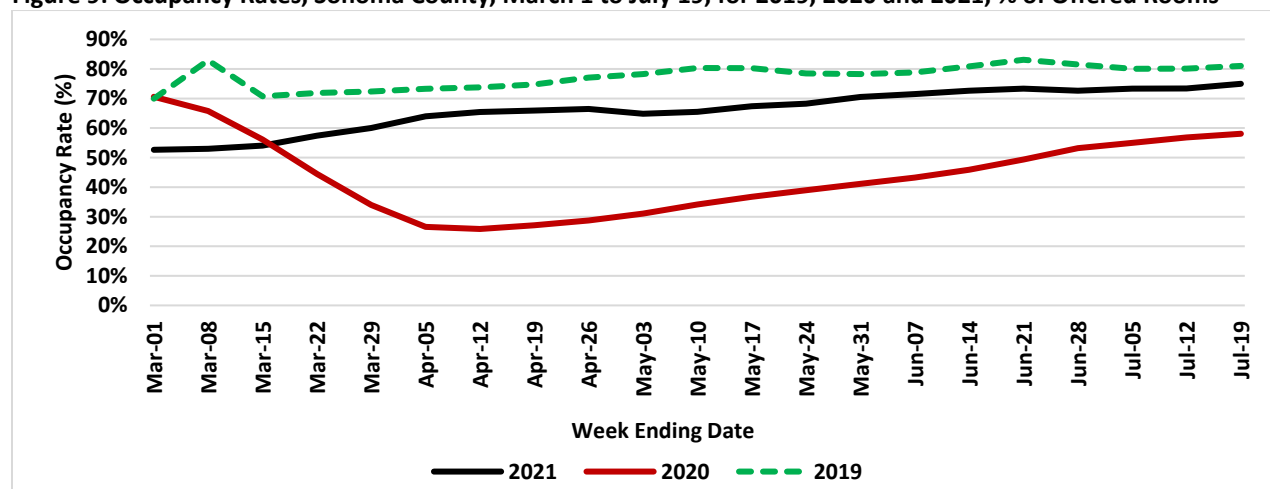
- June 2021 workers in Sonoma County = 7,800
- % difference from Dec 2019 levels as of June 2021 = -3.7%
- Share of total employment in Sonoma County at the end of 2019 = 3.8%
- Share of total employment in Sonoma County at the end of June 2021 = 3.9%
- Forecasted growth from 2020 to 2024 = -200 jobs
- Forecasted share of total employment by 2024 = 3.2%

More than any other set of industries and organizations, leisure and hospitality employers experienced the broadest and deepest changes when the COVID-19 recession began. Jobs in overnight-stay

employers (hotels, motels, B&Bs) experienced job losses but less initial job loss and reduced revenues than restaurants, coffee shops and bars (food services and drinking places officially). This category of industries and organizations spans public and private workers, event centers, overnight-stay (“Accommodations” officially) options, restaurants and bars, and casinos.

Since the beginning of 2021 and the slow lift of restrictions and the proliferation of vaccinations, there has been a reversal of fortune in the tourism industry specific to overnight-stay businesses. Figure shows how Spring 2021 has helped reclaim some of the lost occupancy. There is a natural connection to events here, such as concerts, winery weekend events, and other gatherings. A reduced number of visitors limits the revenue possibilities of events, which limits industry recovery. Notice that 2021’s occupancy rates mirrored 2019, but a consistent difference remains with 2019 occupancy (green line).

**Figure 9: Occupancy Rates, Sonoma County, March 1 to July 19, for 2019, 2020 and 2021, % of Offered Rooms**



Sources: Smith Travel Research and EFA (Courtesy of Sonoma County Tourism)

Headwinds remain in this industry, which may be affected by or have implications for other industries such as retail, restaurants, and events:

- Continued threat of travel restrictions or rising travel costs for international and domestic visitors using air travel as a main mode of transport to Sonoma County;
- Continued health concerns by consumers about attending events (including outdoor), which reduces overnight stay demand; and
- Continued dining restrictions in terms of indoor options as Sonoma County enters fall 2021 and winter 2022.

#### Restaurants and Bars: Related and Not Related to Visitors

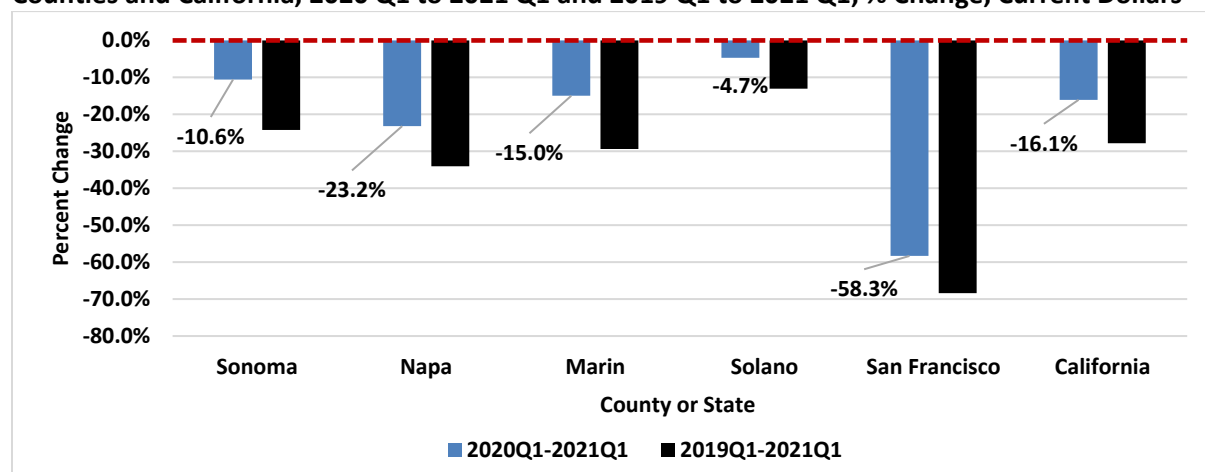
- June 2021 workers in Sonoma County = 12,900
- % difference from Dec 2019 levels as of June 2021 = -27.1%
- Share of total employment in Sonoma County at the end of 2019 = 8.2%
- Share of total employment in Sonoma County at the end of June 2021 = 6.5%
- Forecasted growth from 2020 to 2024 = -700 jobs
- Forecasted share of total employment by 2024 = 7.5%



The data for food services reflects how focal the COVID-19 social restrictions were on specific industries and organizations. Restaurants may continue to have difficulty emerging from the COVID-19 downturn due to this industry's link to Sonoma County visitors. Restaurant business models utilize the use of tables inside the restaurant, so-called "turns", to understand how to hire and also to buying ingredients and beverages. The restaurant's ability to generate turns and up-sell to those seated in the restaurant drives restaurant revenue growth. Stay-at-home orders shifted that model quickly; in some cases, restaurants converted to a take-away model (some could not make that change economically) waiting for the social policy lift versus no revenue at all. However, the increase in costs and the lack of demand may linger even as the economy re-opens.

Recovery for many Sonoma County food-services businesses depends on the return of visitors and regional events, especially of those staying in Sonoma County overnight. The flow of visitors helps increase revenue opportunities. The employment shock in food services is regional and connected to changes in the number of restaurants that are open versus pre-pandemic levels, as well as the number of available workers. Figure 10 shows recent data and comparisons regionally on taxable sales for food services from 2019 Q1 to 2021 Q1. Notice Sonoma County's results are a mix of areas deeply tied to visitor flows (San Francisco County) but also areas that are showing signs of recovery and faster re-opening (Solano County).

**Figure 10: Change in Taxable Sales for Restaurants and Drinking Places (Food Services), Selected Counties and California, 2020 Q1 to 2021 Q1 and 2019 Q1 to 2021 Q1, % Change, Current Dollars**



Source: California Department of Tax and Fee Administration (CDTFA) and EFA

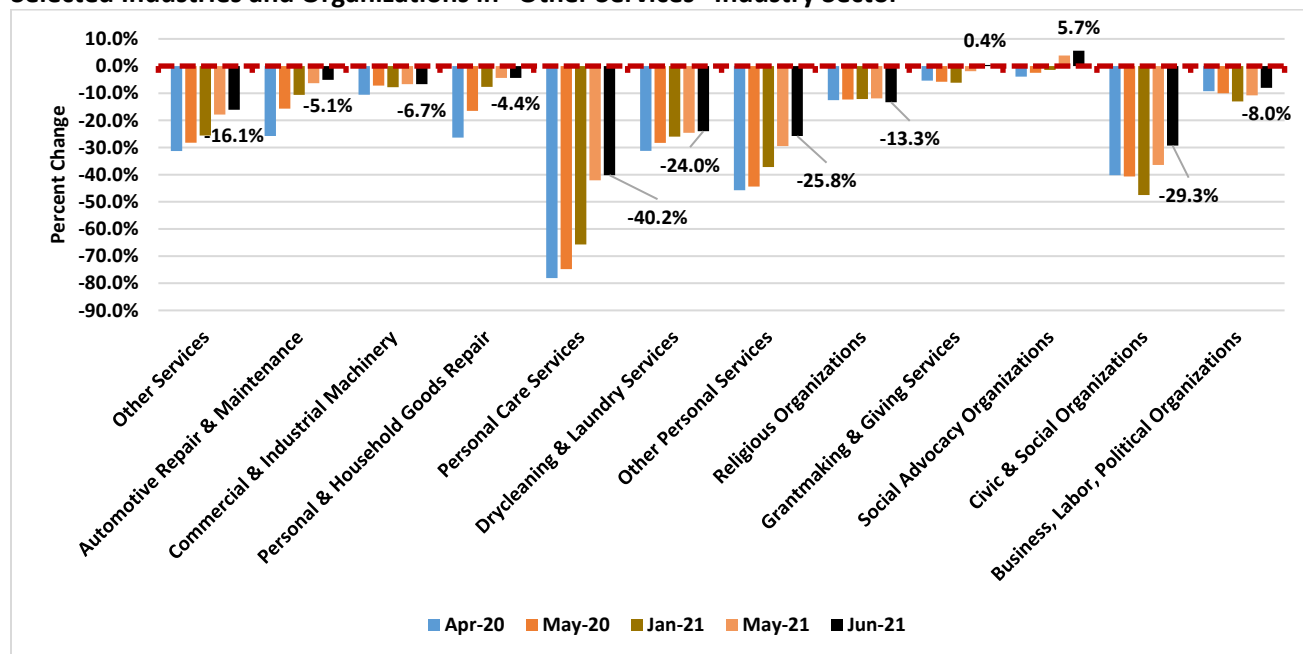
### Other Services

- June 2021 workers in Sonoma County = 6,100
- % difference from Dec 2019 levels as of June 2021 = -14.1%
- Share of total employment in Sonoma County at the end of 2019 = 3.3%
- Share of total employment in Sonoma County at the end of June 2021 = 3.1%
- Forecasted growth from 2020 to 2024 = -100 jobs
- Forecasted share of total employment by 2024 = 5.9%

Due to the nature of some of these services (clients in close, physical contact with service providers or other clients), these industries and organizations were also hit hard by the COVID-19 recession. Included in these jobs are hair salons, nail salons, fitness centers, business and civic associations, as well as religious organizations. Figure 11 shows the mix of industries and organizations in this sector; Figure 11 shows the breadth of effects on these industries throughout California (detailed information at the county level is still emerging).

These employers were among the largest jobs losses in terms of percentage change in Sonoma County, California and the United States. Sonoma County's local non-profit organizations provide a large amount of services for our lower-income workers and communities of need. During recessions, reductions of philanthropy or shifts of giving to specific non-profits and missions or both versus general giving compromise overall resources available. The preservation of wealth, based on housing and equity market prices rising since April 2020, may help also preserve donor giving and funding.

**Figure 11: Other Services Jobs in California, Percentage Change from December 2020 to June 2021, Selected Industries and Organizations in "Other Services" Industry Sector**



Sources: California EDD and EFA

### Summary on Industries and Organization Effects

Leisure and hospitality, retail trade (primarily brick and mortar retail), non-durable goods manufacturing (including food and beverage), and mining and logging (does not include fire-damage remediation) are industries not expected to recover by 2024 to pre-pandemic levels. Healthcare, construction and professional services are likely to lead to a rise in non-farm employment of 3.2 percent from 2020 to 2024 (recovery and expansion). The summary data in the Conclusion section points to specific industries where scarring is more likely.

### 3b. Occupations: Employment Changes to 2024

Occupations are what people do, not the industry or organization for which the worker is employed. These occupational data and forecasts are more perspectives on labor demand as connected to workforce development in Sonoma County.<sup>1</sup> In a similar way to how we considered the major employer groups in the private sector (except for public education), each major occupational category shows recent data comparisons as well as a forecast to 2024. We show five categories (“Cat #” in Figure 20 in Section 5), as these are the same categories as used by the American Community Survey of the Census Bureau and thus allow comparisons across race and ethnicity, gender, and median income on an annual basis as the economic recovery unfolds and questions of equity and recovery continue to emerge.

#### (1) Management, business, science, and arts occupations

- Dec 2020 workers in Sonoma County = 60,060
- May 2020 levels = 48,930
- Share of total employment in Sonoma County at the end of 2019 = 24.4 %
- Share of total employment in Sonoma County at the end of 2020 = 26.0%
- Forecasted growth from 2020 to 2024 = +760 jobs
- Forecasted share of total employment by 2024 = 25.9%

These occupations generally have three, main characteristics: (1) work is done in an office, laboratory or some commercial real-estate environment; (2) jobs need some certificate training, a bachelor’s degree or both; and (3) as a group, due to the science, management and business positions, tend to pay wages higher than Sonoma County’s median wage. Economic development, especially if there are scientific firms targeted for growth (including medical-device design), drive demand for these occupations across multiple industries and organizations. More specifically, this category of occupations includes:

- Management Occupations;
- Business and Financial Operations Occupations;
- Computer and Mathematical Occupations;
- Architecture and Engineering Occupations;
- Life, Physical, and Social Science Occupations;
- Community and Social Service Occupations;
- Legal Occupations;
- Educational Instruction and Library Occupations; and
- Arts, Design, Entertainment, Sports, and Media Occupations.

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<sup>1</sup> For more specific information on the types of jobs in each of these categories, please see [https://www.bls.gov/oes/current/oes\\_stru.htm](https://www.bls.gov/oes/current/oes_stru.htm).

## (2) Service occupations

- Dec 2020 workers in Sonoma County = 66,580
- May 2020 levels = 54,580
- Share of total employment in Sonoma County at the end of 2019 = 28.9%
- Share of total employment in Sonoma County at the end of 2020 = 28.2%
- Forecasted growth from 2020 to 2024 = +2,500 jobs
- Forecasted share of total employment by 2024 = 29.5%

This occupational category has food services workers as well as healthcare workers. As tied to food services employers, restaurant and retail-worker demand is critical to supporting those trained in food and beverage service jobs. This is also true for event and entertainment facilities that have constant customer-service needs. The forecast for healthcare workers in Sonoma County remains strong, where an aging population and a need to attract and retain medical professionals remains a workforce development priority. The pre-pandemic outlook for these occupations to 2024 was better for healthcare occupations than for restaurant and visitor-serving jobs for Sonoma County; those forecasts have further diverged due to the pandemic and subsequent recession's focus on food services.

## (3) Sales and office occupations

- Dec 2020 workers in Sonoma County = 46,605
- May 2020 levels = 42,420
- Share of total employment in Sonoma County at the end of 2019 = 21.9%
- Share of total employment in Sonoma County at the end of 2020 = 20.2%
- Forecasted growth from 2020 to 2024 = -1,070 jobs
- Forecasted share of total employment by 2024 = 19.4%

These occupations remain at risk after COVID-19 due to changes in retail and other sales environments as well as office space not being utilized at the same size or time as before COVID-19. Job losses by specific occupation in this category to 2024 is forecasted for retail jobs and other positions in retail environments (sales staff and cashiers). Administrative assistants and mail carriers are also occupations forecasted to lose workers in Sonoma County toward 2024.<sup>2</sup>

## (4) Natural resources, construction, and maintenance occupations

- Dec 2020 workers in Sonoma County = 29,420
- May 2020 levels = 23,110
- Share of total employment in Sonoma County at the end of 2019 = 21.9%
- Share of total employment in Sonoma County at the end of 2020 = 12.8%
- Forecasted growth from 2020 to 2024 = +1,660 jobs
- Forecasted share of total employment by 2024 = 13.3%

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<sup>2</sup> The occupational forecasts come from a mix of data sources. EFA used those data sources and recent data from McKinsey and Company (see Figure 15) to finalize the data.

The outlook for this set of occupations, which are mainly outdoors jobs and those that are connected to either agriculture or construction is the largest for Sonoma County among these larger occupational categories. Workforce development for these occupations are likely to have significant return for Sonoma County's employers. Building maintenance, depending on the evolution of commercial real estate utilization, may have some threat, but those workers may turn their expertise toward assisting those working from home or in other commercial real estate settings.

#### (5) Production, transportation, and material moving occupations

- Dec 2020 workers in Sonoma County = 27,140
- May 2020 levels = 24,800
- Share of total employment in Sonoma County at the end of 2019 = 11.5%
- Share of total employment in Sonoma County at the end of 2020 = 11.8%
- Forecasted growth from 2020 to 2024 = +110 jobs
- Forecasted share of total employment by 2024 = 11.6%

The outlook for these positions, all connected through a manufacturing and logistics process, has a strong outlook to 2024. The outlook depends on continued growth in food and beverage, wineries and medical-device manufacturing, as well as general logistics demand. Transportation and warehousing experienced an increase in jobs during the COVID-19 recession in Sonoma County as of July 2021 specific to home delivery, but reduced demand for distribution jobs to restaurants and broader retail outlets due to supply-chain disruptions. Growth is forecasted to 2024 and these predictions may be low if homes become workplaces and households shift more retail to online order and home delivery versus brick and mortar.

#### Summary of Occupations Changes and Importance to Workforce Development

Economic development and workforce development are linked through occupational demand for workers. Job postings are for occupations and not for industries. Funding for training programs ultimately prepares a skilled workforce from regional residents. Inbound commuters provide a regional labor force across the North Bay counties, but Sonoma County is among the lowest levels in the Bay Area of using residents outside the county as additional workforce. How people work and how that affects some occupations and industries more than others is one of the large questions going forward for employers. The next section shows recent, national-level research on this topic to help our risk assessment later. Wages actually increased from 2020 to 2021, suggesting that employers struggled to find workers in the beginnings of the economy re-opening post-recession. Occupational changes in 2020 followed industries that either shut down due to county and statewide health concerns, or employers that re-opened slower than others or a combination.

## Increasing ROI from ARPA Funding: Economic Impacts and Multipliers

Section 3's data shown above pointed to potential "scarring" or medium-term effects of the lost jobs in 2020 by employer or for specific occupations. Section 5 provides summary data on employers and occupations to identify risks and recommend how to distribute ARPA funding. Figure 12 provides another data point by employer sector. These data show where investing ARPA funding may have the largest economic impacts based on the multiplier, or "bang for buck" in terms of investment in those industries generating demand in other industries. The larger the multiplier, the larger the countywide effects of ARPA investment in theory.

The latest estimates from IMPLAN® (see [www.implan.com](http://www.implan.com) for more) for Sonoma County show the following "multipliers" or additional income generated by \$1 of new income from those industries net of taxes paid. If we think of the ARPA funding as an infusion of government spending specific to an industry, Figure 12's data act as an additional guide to how the ARPA funding may have the biggest bang for buck as we look at broader considerations in Section 4.

**Figure 12: Multiplier Effects as of 2020 for \$1 of Investment by Industry Sector, Sonoma County**

Industry	\$1 gets \$X of Effects	Industry	\$1 gets \$X of Effects
Agriculture, Forestry, Fishing & Hunting	\$1.24	Real Estate and Rental and Leasing	\$1.32
Mining	\$1.51	Professional and Technical Services	\$1.31
Utilities	\$1.30	Management of Companies and Enterprises	\$1.27
Construction	\$1.23	Administrative and Waste Services	\$1.30
Manufacturing	\$1.29	Educational Services	\$1.30
Wholesale Trade	\$1.35	Health Care and Social Assistance	\$1.25
Retail Trade	\$1.29	Arts, Entertainment, and Recreation	\$1.42
Transportation and Warehousing	\$1.29	Accommodation and Food Services	\$1.29
Information	\$1.41	Other Services, Ex. Public Admin	\$1.23
Finance and Insurance	\$1.65	Real Estate and Rental and Leasing	\$1.32

Sources: IMPLAN® and EFA

It is important to see these multipliers as statements of changes in income, not jobs. Concerns over job expansion or preservation, especially where under-represented groups may have experienced less equity in recovery otherwise, may have both economic and social gains more than the simple income gains as shown in Figure 12. Let's now have a look at such broader considerations and forecasts.

## 4. Broader Considerations and Sonoma County Forecasts

When jobs are lost, especially in a general way as with COVID-19, sometimes local strengths can help balance the losses and also assist in economic recovery. In cases where economic recovery is not as quick in some industries versus others, local strengths during normal times may drag on the economy.

### BIPOC Communities and Occupations Shifts

Given the pre-pandemic risk exposure and the forecast for those occupations, Figure 13 provides an example way to track BIPOC progress in terms of labor demand. Categorically, this is black, indigenous and people of color or BIPOC groups. A concern for both workforce development, economic development, community advocates, and elected officials alike are the effects of the COVID-19 recession that may be differential on specific socioeconomic, racial and ethnic groups. Figure 13 shows a “heat map”, where occupations by race and ethnicity show potential risks based on the 2024 forecast shown in Figure 14. The way to read Figure 13 is a red cell is an occupation category where a combination of relatively low-wages (below county median) and at least a 10-percent loss of jobs between May 2019 and May 2020 (the initial stages of the COVID-19 recession) exists. The mix of BIPOC versus white workers by job category for both Sonoma County and California provides comparison information about the jobs workers that identify as part of BIPOC communities do as of May 2019 (pre-pandemic).

**Figure 13: BIPOC Heat Map, Occupational Risk from Pre-Pandemic Employment Levels and Post-Pandemic Forecasts combined (red cells means rising risk), 2019 Data, 2021 Median Wage, and Change in Labor Demand**

	CA White	Sonoma White	CA BIPOC	Sonoma BIPOC	Sonoma Median Wage 2021	Jobs Change Q2 2019 to Q2 2020 (%)
<b>Totals</b>						
<b>Total and County Median Wage</b>	<b>59.5%</b>	<b>72.9%</b>	<b>40.5%</b>	<b>27.1%</b>	<b>\$23.18</b>	<b>-6.8%</b>
Management	67.4%	83.6%	32.6%	16.4%	\$54.96	-3.3%
Business and Financial Operations	60.8%	84.6%	39.2%	15.4%	\$35.96	1.9%
Computer and Mathematical	47.1%	84.6%	52.9%	15.4%	\$42.79	-2.4%
Architecture and Engineering	54.3%	72.0%	45.7%	28.0%	\$47.53	-12.2%
Life, Physical, and Social Science	61.4%	80.0%	38.6%	20.0%	\$41.43	8.3%
Community and Social Service	61.6%	92.1%	38.4%	7.9%	\$24.74	-3.1%
Legal	72.3%	89.2%	27.7%	10.8%	\$53.21	-11.1%
Educational Instruction and Library	69.1%	79.0%	30.9%	21.0%	\$27.78	-6.1%
Arts, Design, Entertainment, Sports, and Media	69.3%	86.6%	30.7%	13.4%	\$30.66	-7.3%
Healthcare Practitioners and Technical	52.3%	73.8%	47.7%	26.2%	\$48.73	7.2%
Healthcare Support	48.8%	65.9%	51.2%	34.1%	\$17.61	4.2%
Protective Service	59.6%	72.5%	40.4%	27.5%	\$24.51	0.9%
Food Preparation and Serving Related	55.1%	61.2%	44.9%	38.8%	\$15.32	-20.5%
Building and Grounds Cleaning and Maintenance	55.2%	43.9%	44.8%	56.1%	\$18.28	-4.3%
Personal Care and Service	56.2%	61.6%	43.8%	38.4%	\$16.38	-20.5%
Sales and Related	62.5%	75.4%	37.5%	24.6%	\$19.68	-12.0%
Office and Administrative Support	58.7%	78.4%	41.3%	21.6%	\$22.69	-10.6%
Farming, Fishing, and Forestry	62.4%	37.6%	37.6%	62.4%	\$17.71	-6.3%
Construction and Extraction	63.5%	68.7%	36.5%	31.3%	\$31.04	0.2%
Installation, Maintenance, and Repair	62.9%	63.7%	37.1%	36.3%	\$27.43	-5.5%
Production	53.9%	65.6%	46.1%	34.4%	\$19.04	-6.8%
Transportation and Material Moving	54.3%	63.0%	45.7%	37.0%	\$18.47	-5.8%

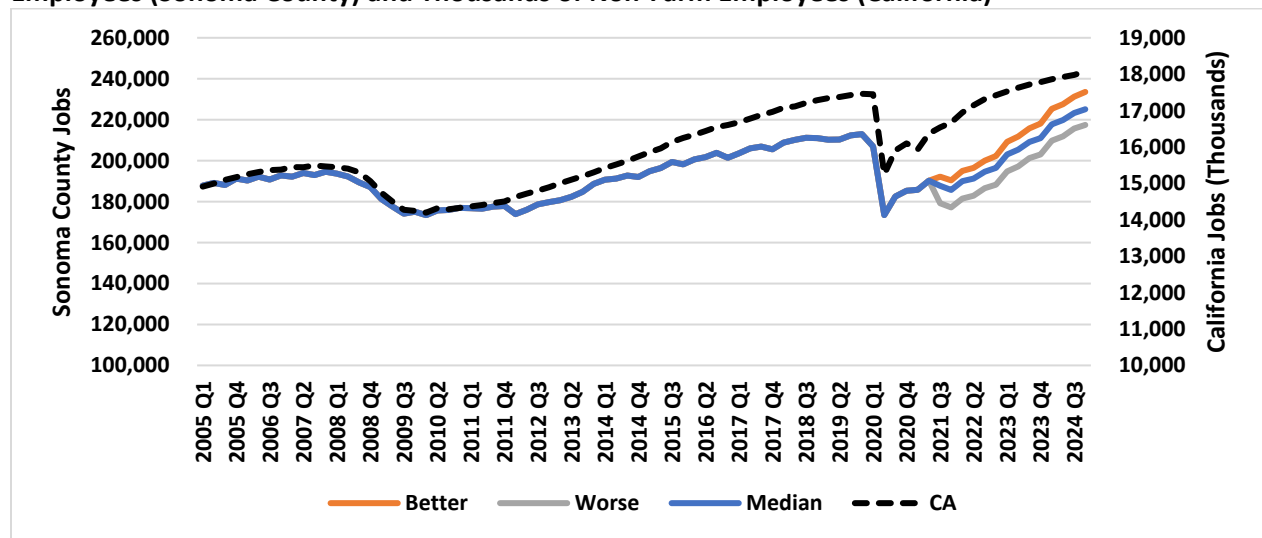
Sources: Census Bureau and EFA

Data continue to emerge as to county and state level outcomes for under-represented groups, though the national-level data provide some insights.

### Updated Forecasts for Sonoma County to 2024

Figure 14 provides the summary forecast by major industry sector updated from 2020. Many of the major sectors of concern remain: leisure and hospitality, retail stores, government (including public education) and administrative workers. As of June 2021 (the latest data available as of July 2021), we can see the gains that have been made as the county economy recovers and how far away some industries remain from regaining the 2019 Q4 volume of workers. Figure 14 summarizes the non-farm employment forecasts for the Sonoma County scenarios and California's forecast by the California Department of Finance. This forecast to 2024 has improved from EFA's forecast for Sonoma County in 2020 such that Sonoma County is likely to return to its pre-pandemic level of employment by 2023 versus 2024 (one year earlier than the 2020 forecast for the median outcome or the blue line).

**Figure 14: California and Sonoma County Employment Actuals and Forecasts, Number of Non-Farm Employees (Sonoma County) and Thousands of Non-Farm Employees (California)**



Sources: California Department of Finance and EFA

#### Median Forecast Elements and Concerns:

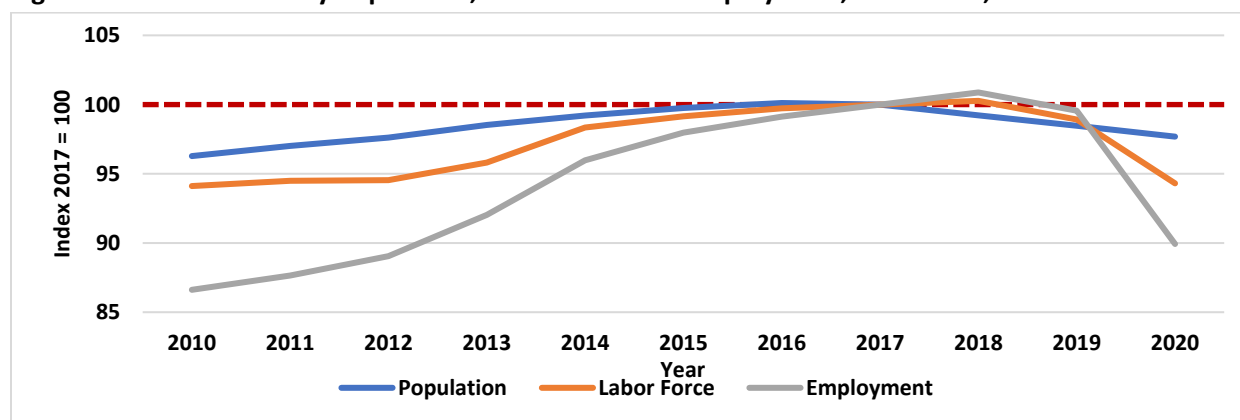
- Construction and professional services employers are main growth areas for countywide employment;
- Slow recovery in retail, administrative services, education, leisure and hospitality (tourism and hotels, bars and restaurants), and other services drag on the local economy to 2024;
- These forecasts assume no additional social policies that reduce recovery momentum such as new, general stay-at-home orders (there may be industry-specific concerns in retail, hospitality and other services from 2020 to 2024); and
- The national and state economies recover per the forecasts shown in Section 2 above.



## Forecasts of Residential Labor Force Data

The change in local labor force remains alarming through June 2021. Because Sonoma County has lost population since 2018 (after the Tubbs Fire in 2017, there has been lower population levels estimated by both California Department of Finance and the Census Bureau's American Community Survey). The labor force is the sum of the employed and unemployed that are actively seeking work; we know these data undercount the number of workers available for work; some workers are not counted officially in the labor force due to retirement or being discouraged about getting another job but may take a job if offered. Figure 15 compares population change and labor force change since 2010. Sonoma County. Notice that after 2017, population and labor force and employment all trended lower and the losses were exacerbated by the COVID-19 recession.

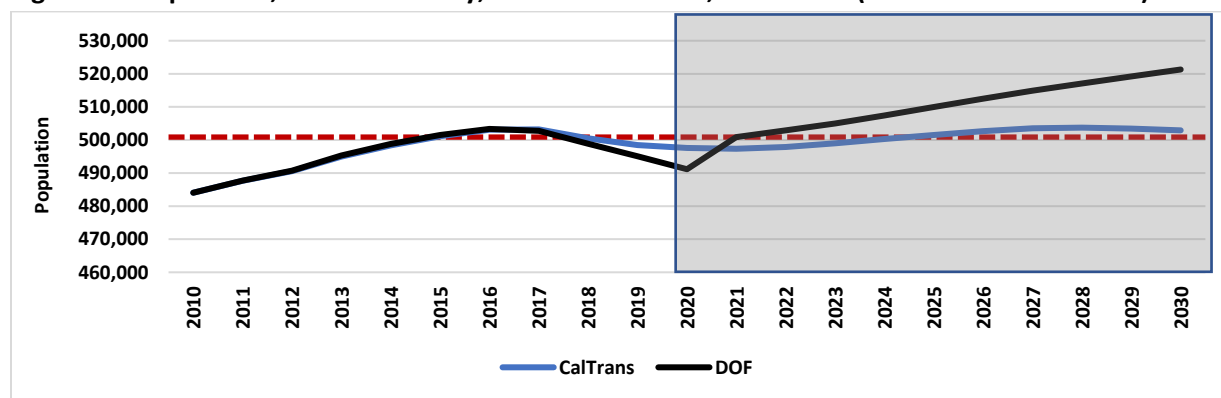
**Figure 15: Sonoma County Population, Labor Force and Employment, 2010-2020, Index 2017 = 100**



Source: California Department of Finance, California EDD and EFA

Labor force levels are difficult to forecast at the state and national levels (let alone at the county or city levels), though local population estimates generally drive those forecasts. Two forecasts for Sonoma County to 2050 are from the California Department of Finance and California Department of Transportation (CalTrans). Notice how far apart these are versus the employment forecasts in Figure 16. Such divergent forecasts put uncertainty into future labor force.

**Figure 16: Population, Sonoma County, DOF and CalTrans, 2010-2030 (shaded area = forecast)**



Sources: California Department of Finance and California Department of Transportation and EFA

## Working from Home and The Economy Reopening

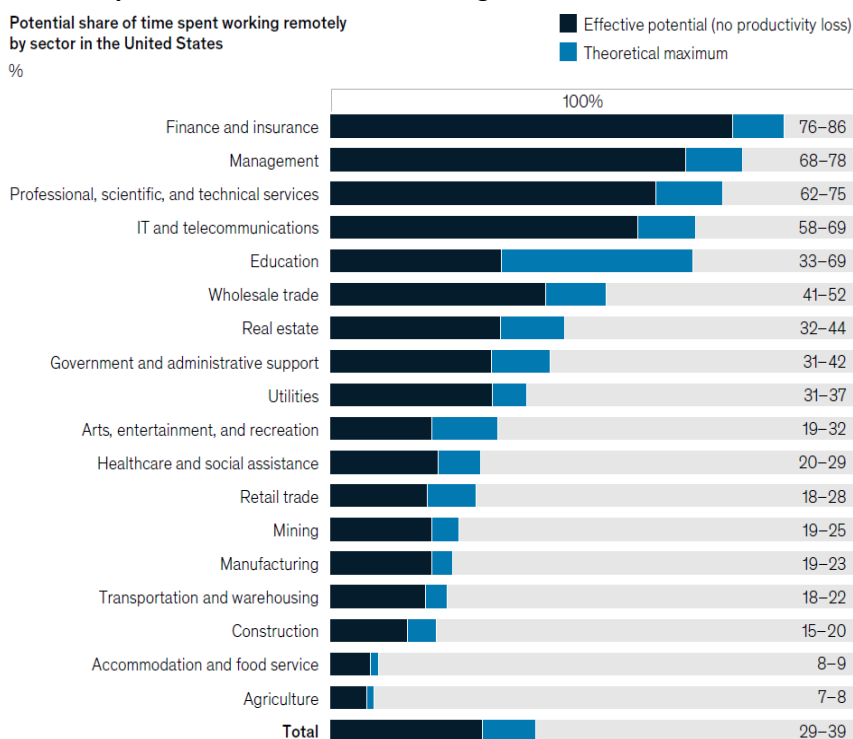
How employers in Sonoma County are affected by COVID-19 in the medium term depends somewhat on how people work. In the short-term (to 2022), economic and workforce development professionals in Sonoma County should expect continued uncertainty and movement. By 2023, new work environments should be settled and suggest how commute patterns will work and how there are changes to intraday business opportunities with some pre-pandemic commuters now working from home. Sonoma County historically has a large level of its available workers coming from Sonoma County residents that are part of the labor force. Not all those jobs are easily done at home, or more specifically away from an

office. We use a recent study by McKinsey and Company as a summary of research on the portability of industry employment (Figure 17). Most portable jobs are in professional services industries. However, there are many occupations where jobs are portable based on how they support jobs that may not be as portable. How commuting workers help support Sonoma County's economy is debatable given a relatively large proportion of county jobs are filled by county residents. Data on commuters generally do not include the self-employed, which are generally all considered to be residents that work locally.

On the occupational side, McKinsey (2021) considered the following assumptions when looking forward to 2030. While EFA's study is going out to 2024 primarily, we should expect that any trends to 2030 are considered as starting early in the decade and coming to fruition over the ten years and not to suddenly appear after 2025. Figure 18 summarizes the outlook in McKinsey (2021) for occupations.

- **Increased remote work and virtual meetings/reduced business travel:** this outcome has potentially negative effects on commercial real estate demand, restaurant and catering services demand, overnight stay industry demand, and many other industries in terms of the pre-COVID capacity of employment;

**Figure 17: Industry Level Considerations of Working from Home**

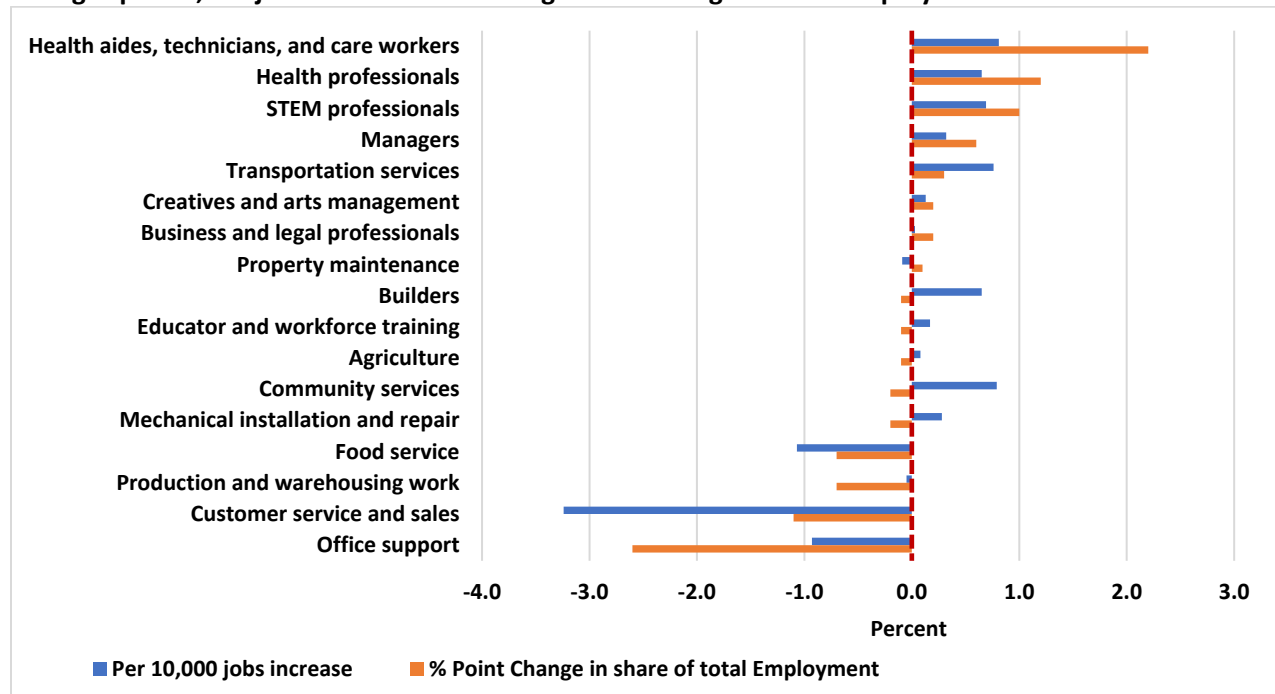


Note: The theoretical maximum includes all activities not requiring physical presence on-site; the effective potential includes only those activities that can be done remotely without losing effectiveness. Model based on more than 2,000 activities across more than 800 occupations.

Source: McKinsey Global Institute analysis

- **Shifts to e-commerce and other virtual transactions:** the shifts that took place during COVID-19 in terms of retail with home delivery are not going to fade and may expand rapidly, which affects retail jobs and commercial real estate and regional warehousing and transportation jobs and space;
- **Faster adoption of automation and artificial intelligence (AI):** while some jobs are more at threat of being placed by algorithms or machines or both, it is important for **all** occupations to recognize that COVID-19 may have many entrepreneurs looking to replace jobs with computer intelligence based on economic incentives: no job is 100-percent safe from machine replacement.

**Figure 18: Workforce Development Forecast Needs to 2030, Changes by Major Occupation**  
Changes per 10,000 jobs filled and Percentage Point Change in Total Employment



Source: McKinsey (2021)

### Emerging Examples and Concerns

Counties across the state of California are having many political and social debates about the use of the ARPA funding. In counties such as Tuolumne, there is consideration to providing a portion of the ARPA funding as local debit cards to local residents where they can only spend those dollars at local businesses headquartered in Tuolumne County. Los Angeles County is considering using an equity scorecard and targeting funds to those areas most vulnerable (primarily areas with a majority of BIPOC households), including BIPOC-owned businesses. The [National Conference of State Legislatures \(NCSL\)](#) has a searchable database as to how those states that have made decisions on ARPA funding intend to spend the dollars. There is a wide array of examples, most of which are classic uses of such federal funds: small business loans focused on those industries affected the most by recession; training program funding for those occupations with forecasted demand but difficulty hiring now; and expanding marketing, especially to local residents to buy goods and services from locally-owned businesses.

## 5. Conclusions

### What are the most vulnerable industries to 2024?

Given the data above and recovery momentum in Sonoma County as of June 2021, as well as the state and national forecasts, we can summarize to focus on the most vulnerable (in red) industries in Sonoma County. Industry-level recovery from the COVID-19 recession on Sonoma County's economy to June 2021 follow state and national trends generally; industries such as leisure and hospitality and other services remain well below pre-pandemic employment levels. Figure 19 also includes a location quotient (LQ), or the ratio of an industry's local employment level as a percentage of the local area's total employment to the same ratio of a larger comparison area (California). Industries that have relative economic strength are suggested by LQs greater than 1; such LQs can represent both local economic strengths and local risk. Figure 19's summary data include:

- Ability to work from home (from McKinsey and Company);
- Percent reduction in the number of jobs from Dec 2019 to June 2021 (the latest data);
- Forecasted percent change in employment to 2024 from Dec 2019;
- Location Quotient in Sonoma County (larger LQ means more economic support for the industry).

**Figure 19: Summary Industry and Organization Data, Sonoma County, as of June 2021**

Industry	Jobs June 2021	Change Job Dec 2019 to June 2021	% Change Dec 2019 to June 2021	LQ (as an inverse measure of local risk), 2019	Work from Home Probability	% Change Dec 2019 to Dec 2024
Accommodation and Food Services	17,200	-4,600	-21.1%	1.06	9	-9.1%
Educational Services	1,400	-1,000	-41.7%	0.52	33	-7.3%
Administrative and Waste Management	11,300	-500	-4.2%	0.86	31	-0.3%
Arts, Entertainment, and Recreation	3,500	-500	-12.5%	1.01	19	1.0%
Management of Companies	2,200	0	0.0%	0.71	68	2.0%
Health Care and Social Assistance	32,400	-1,000	-3.0%	1.14	20	2.5%
Transport, Logistics and Utilities	4,200	0	0.0%	0.98	25	3.0%
Real Estate and Rental and Leasing	3,100	-900	-22.5%	1.10	32	3.0%
Natural Resources (Mining and Logging)	200	0	0.0%	0.74	19	4.6%
Finance and Insurance	4,300	-400	-8.5%	0.72	76	5.6%
Government	27,300	-2,200	-7.5%	0.94	31	5.7%
Other Services	6,100	-1,000	-14.1%	1.02	25	7.1%
Manufacturing	22,100	-800	-3.5%	1.46	19	7.1%
Retail Trade	23,000	-1,200	-5.0%	1.21	18	9.6%
Wholesale Trade	7,400	-200	-2.6%	0.91	41	9.9%
Information	2,200	-400	-15.4%	0.38	52	11.1%
Construction	16,100	300	1.9%	1.54	15	11.6%
Professional, Scientific, Tech Services	9,400	-100	-1.1%	0.59	68	13.2%
Agriculture	6,600	200	3.1%	1.19	7	17.3%

Sources: California EDD, EMSI, EFA (Data are Seasonally Adjusted)

Because employers hire for specific jobs, the use of ARPA funding may also be to train or support specific occupations remaining available in Sonoma County.

## What are the most vulnerable occupations to 2024?

The critical aspect of the vulnerable occupations is where workforce development support may be needed. Vulnerable does not necessarily mean strong return on investment for workforce development. Figure 20 shows where projected demand may be by occupation from two sources, one pre-pandemic and one post-pandemic. Figure 20's data provide occupations that are at risk (in red) without more workforce development given the data and forecasts we have as of July 2021. Reduced demand for specific occupations can lead to changes in available skills locally (due to a lack of programs for training because of regional lack of demand, workers leaving the area or both). These summary data in Figure 20 include (with "Cat #" referring to the categories in Section 3b above):

- Percent change in jobs from May 2019 to May 2020 (the latest data);
- Percent change in jobs from May 2020 to Dec 2024 (forecasted);
- Occupational Quotient (OQ) in Sonoma County (larger OQ means more economic support for the industry, similar theory as the LQ for industries).

**Figure 20: Occupations (What People Do) and Employment Demand  
Sorted by Percentage Change from 2020 to 2024**

Cat #		2020	Jobs Change since 2019	% change 2019-20	Change 2020-2024	% change 2020-24	Occ Quotient (OQ)
	<b>Total all occupations</b>	<b>193,830</b>	<b>-14,040</b>	<b>-6.8%</b>	<b>3,940</b>	<b>2.0%</b>	
(2)	Healthcare Support	12,000	480	4.2%	1,850	15.4%	1.02
(4)	Construction and Extraction	13,290	20	0.2%	1,320	9.9%	1.34
(1)	Community and Social Service	4,090	-130	-3.1%	350	8.6%	1.34
(2)	Building and Grounds Cleaning and Maintenance	6,970	-310	-4.3%	480	6.9%	1.18
(1)	Legal	1,040	-130	-11.1%	70	6.7%	0.58
(2)	Protective Service	3,300	30	0.9%	200	6.1%	0.64
(1)	Life, Physical, and Social Science	1,830	140	8.3%	100	5.5%	1.06
(2)	Healthcare Practitioners and Technical	10,730	720	7.2%	490	4.6%	1.84
(4)	Farming, Fishing, and Forestry	3,410	-230	-6.3%	130	3.8%	1.34
(4)	Installation, Maintenance, and Repair	6,410	-370	-5.5%	210	3.3%	0.63
(1)	Computer and Mathematical	3,230	-80	-2.4%	80	2.5%	0.53
(1)	Management	12,160	-410	-3.3%	250	2.1%	0.97
(1)	Architecture and Engineering	3,020	-420	-12.2%	60	2.0%	1.81
(5)	Transportation and Material Moving	14,030	-860	-5.8%	230	1.6%	0.74
(1)	Business and Financial Operations	10,070	190	1.9%	110	1.1%	0.83
(5)	Production	10,770	-790	-6.8%	-130	-1.2%	1.09
(2)	Personal Care and Service	4,390	-1,130	-20.5%	-60	-1.4%	0.91
(3)	Office and Administrative Support	22,350	-2,650	-10.6%	-340	-1.5%	0.81
(1)	Educational Instruction and Library	11,450	-750	-6.1%	-230	-2.0%	1.47
(1)	Arts, Design, Entertainment, Sports, and Media	2,040	-160	-7.3%	-40	-2.0%	0.62
(2)	Food Preparation and Serving Related	17,190	-4,430	-20.5%	-460	-2.7%	1.57
(3)	Sales and Related	20,070	-2,740	-12.0%	-730	-3.6%	0.99

Sources: California EDD, Occupational Employment and Wages Statistics (OEWS), EMSI, and EFA

A premise of this study is that ARPA funding allocation would fall on a combination of economic and workforce development activities. We now consider ways to filter allocation choices based on our findings.

## Recommendations for Use of Funding

The American Rescue Plan Act of 2021 (ARPA) is expected to provide approximately \$96 million to Sonoma County. A portion is to be allocated for economic and workforce development to help employers remain economic stable into the near future. A return on the funding need not be equal to what is paid, but the premise of funding should be that the county economy generates at least as much in gain from the cost of the funding. Those industries and occupations most at risk can be considered two ways: (1) the most short-term need; or (2) areas with the most medium-term risk.

Businesses seeking the funding should suggest what their business plan may be over the next three years: how would they use the funding? While political exigency may drive some decision making, economic prudence suggests something other than a first-come, first-serve model. Example criteria include:

1. Business to be funded has a viable business plan with viable financial projections to 2024;
2. Business headquartered in Sonoma County;
3. Multiplier effects of ARPA spending on that industry support a relatively large level of additional income (bang for buck);
4. The business serves BIPOC communities and does not exclude their support;
5. Risk of this industry remaining competitive to 2024 is relatively low, especially if funding provided;
6. Business utilizes local residents as a workforce; and
7. Business is in a targeted industry per Sonoma County EDB's strategic planning.

Occupations to be trained, thus training centers or workforce development specialists seeking funding, should also provide a plan for new workers to match up to rising demand. Similar criteria should apply:

1. Occupations with rising demand given COVID-19 shadow effects between 2021 and 2024;
2. Occupations flexible among multiple industries;
3. Occupations specific to one industry must have a rising jobs forecast to 2024 for funding; and
4. Occupations specific to one industry may have rising risk if automation replaces the job or there are continued risks from COVID-19 and variants that can affect hiring for such jobs.

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